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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,485	03/12/2001	August Sprock	HM-394PCT	5638

7590
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09/24/2003

EXAMINER

YEE, DEBORAH

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/744,485

Applicant(s)

SPROCK, AUGUST

Examiner

Deborah Yee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Arguments

This is in response to the Appeal Brief filed July 7, 2003. The finality of the rejection dated May 3, 2002 is withdrawn. A new rejection ground is as follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the English translation of Japanese patent 57-104650 in view of the English abstract of Japanese patent 362112732.

The English translation of JP'650 discloses a method of producing dual-phase steels from the hot-rolled state with a 2-phase microstructure of ferrite and martensite by controlling temperature and cooling rate similar to the present invention. See prior art examples 4 to 8 in Table 2 and 3rd paragraph on page 14 wherein steels are processed by hot rolling with a finishing temperature of 825C (T2) followed by cooling at 20C/sec (C1) to 600C(T3) to produce a microstructure of 70 to 85% ferrite with a balance of untransformed austenite, and then directly subjected to a faster cooling rate at 60C/sec (C2) to a coiling temperature (T4) to convert untransformed austenite into martensite without any intermediate air cooling and holding time.

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Note that the prior art process first cools at a cooling rate at 20C/sec which is within the claimed first cooling rate of 20-30K/s (note centigrade/sec is equivalent in rate ratio with Kelvin/sec) . Moreover, similar to applicant the first cooling rate obtains 70 to 85% ferrite. See 2nd paragraph on page 12 wherein the first cooling rate (C1) is at a cooling speed at which the ferrite forms sufficiently during cooling to T3 and untransformed austenite coexist . Moreover, the prior art process further cools the steel at a second cooling rate of 60C/sec which is faster than the first cooling rate and transforms the untransformed austenite to martensite, see last paragraph on page 12 continuing on page 13 .

Even though prior art does not teach carrying out the first cooling stage at a cooling stretch comprised of several water cooling stages position successively at a spacing from one another as recited by claim 5, such technique would be an obvious modification to incorporate in the JP'650 process in view of the teaching of JP'732 . Note that the English abstract and figure 1 on page 167 of JP'732 discloses subjecting a hot rolled steel sheet to controlled cooling, similar to applicant's invention, by a cooling stretch comprised of several water cooling stages position successively at a spacing from one another. Since 1st paragraph on page 10 and 3rd paragraph on page 14 of JP'650 seeks and desires to subject a hot rolled steel plate to control cooling at 20C/second, then it would be obvious and a matter of routine optimization well within the skill of the art to incorporate the well known control cooling technique and apparatus of JP'732 .

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Applicant argued that JP'650 teaches cooling to a specific temperature at a specific rate in the first slow cooling step. There is no teaching in regard to first ensuring at >70% ferrite contents before beginning the second cooling step. The prior art method only prescribes a target temperature and a specific cooling rate and thus a specific cooling duration. In contrast, the microstructural conversion according to the invention is carried out without defining a temperature or time limit. It is the examiner's position that applicant's present invention also prescribes a target temperature and a specific cooling rate and time limit as evident by applicant's cooling curve 10 in Figure 2. Note that curve 10 has parameters of temperature and time similar to prior art cooling curve shown in figure 1 wherein cooling curve 10 has a first stage cooling occurring at points 14, 15 and 16; similarly prior art cooling curve has a first stage cooling occurring at points T1, T2, and T3 to produce ferrite before beginning the second cooling step. Although there is no specific step of ensuring at least 70% ferrite content before beginning the second cooling step, such is indirectly taught in the broad embodiment of JP'650. See JP'650 on page 9, 3rd paragraph which discloses the production of 1 to 80% martensite and desirably 8 to 15% martensite. Therefore, JP'650 prefers to produce a dual phase steel of 85 to 92% ferrite and 8 to 15% martensite; and thus the prior art process would perform the first cooling step to desirably obtain at least 85% ferrite (>70%) before cooling in the second stage to obtain martensite. Hence claim would not patentably distinguish over prior art.

Although the present invention first cooling stage is independent of composition, such would not be a patentable difference. Applicant's claim 5 recites a method for

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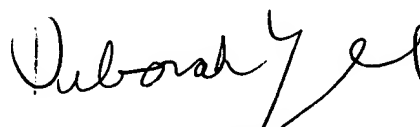
producing dual-phase steels with no compositional limitation and hence would broadly encompass all steel compositions, even the compositions disclosed by JP'650.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 703-308-1102. The examiner can normally be reached on Monday-Friday from 6:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 703-308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

dy


DEBORAH YEE
PRIMARY EXAMINER